

DEVICE FOR FIXATION OF CATHETER AND FILTER

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The invention concerns a device for fixation of catheter and filter.

Description of the Related Art

[0002] If a catheter is introduced into a patient, for example for administration of an anesthetic or medication, there is the problem of how to fix or anchor the catheter and associated filter to the patient. It must be avoided that the catheter is accidentally pulled out of the patient during moving of the patient. Also, the securing of the catheter and the filter by adhering to a surface of the body of the patient can result in certain cases that the supply of the anesthetic is pinched off. In addition, in the case of this inflexible fixing there is the danger that during movement of the patient the catheter can be pulled out, which risk is particularly large.

[0003] DE 297 20 182 U1 describes a foamed bandage, which can be adhered to the skin of the patient, with a perpendicularly oriented pin, upon which the filter can be freely rotatably mounted. The filter, which is thus anchored via the bandage locally to the surface of the body of the patient and is connected via the catheter with the patient, can follow the movement of the patient during rotation of the patient and catheter. Nevertheless here, also the catheter must be secured to the patient by an adhesive strip.

[0004] From DE 1 954 956 a device for securing a catheter is known, in which the catheter is clamped into a channel of a mounting block, wherein the channel has a diameter which corresponds to the outer diameter of the catheter. The effect of this device for securing a catheter corresponds essentially to

that of an adhesive strip,, since a defined point of the catheter is fixed to the body of the patient.

SUMMARY OF THE INVENTION

[0001] The task of the invention is comprised therein, of providing a device, which reliably anchors catheter and filter to the patient, without substantially interfering with the freedom of movement of the patient.

[0002] The task is solved by a device for anchoring a filter and a catheter according to patent claim 1.

[0003] Advantageous embodiments and further developments of the invention are set forth in the dependent claims.

[0004] The inventive device for anchoring a filter and a catheter includes an adhesive bandage, a securing element for anchoring the catheter, and a carrier element for mounting the filter, wherein either the securing element or the carrier element is applied to the adhesive bandage, and wherein the securing element includes a first coupling element, which is releasably connectable with a second coupling element provided on the carrier element. Therewith it becomes possible with one device to simultaneously anchor the catheter and filter on the patient.

[0005] The securing element preferably includes openings, of which the axes are approximately parallel to the plane of the securing element. These openings receive the catheter, whereby it is anchored to the body of the patient.

[0006] In a preferred further embodiment of the invention the openings are designed in such a manner that the diameter of the openings is somewhat larger than the diameter of the catheter.

The catheter is thus located or positioned by the securing element, but can however be slid freely back and forth in the openings of the securing element. Therewith, the catheter is anchored to the patient, however axially moveable to the extent that it can follow any movement of the patient and thus there is no danger that the catheter can be pulled out by a movement of the patient.

[0007] Preferably the securing element includes gaps or slits, which are open on the surface of the securing element and widen on the base toward the openings. Instead of having to thread the catheter through the openings and subsequently introduce it into the patient or connecting it to the filter, it is thereby possible, to press-in the catheter through the gap or slit in the opening of the securing element after it has already been introduced into the patient and connected to the filter.

[0008] Preferably the breadth of the gap is slightly smaller than the diameter of the catheter. In this way the catheter is trapped in the opening and therewith anchored to the disc, can however continue to be freely moved axially back and forth in the openings of the securing element.

[0009] In an advantageous further development of the invention the openings in the bars provided on the surface of the securing element are oriented parallel to the plane of the securing element. The openings are therewith particularly easily accessible. Preferably, the bars are provided in the shape of a right-angled cross.

[00010] The catheter can be introduced between two openings of the bar with some surplus such as with a loop. During movement of the patient the part of the catheter distant from the patient slides in the opening, whereby the loop increases or as the case

may be becomes smaller. The part of the catheter close to the patient is however held securely in the securing element, so that the catheter cannot be pulled out.

[00011] Preferably one of the two coupling elements is in the form of a pin, while the other of the two coupling elements is in the form of an opening, into which the pin can be introduced. Preferably the pin and the opening are in the form of engaging elements or form fitting or self-locking elements, which makes possible a particularly simple connection of the securing element and the carrier element.

[00012] Preferably the pin and the opening are in the form of a polygon, for example a symmetric hexagon or octagon. The filter can therewith be anchored in multiple positions in relation to the securing element, depending upon how the catheter is running relative to the patient.

[00013] Preferably the filter is releaseably secured to the carrier element. Therewith a particularly simple changing out of the filter is made possible, while the device for anchoring of catheter and filter to the body of the patient remains.

[00014] Preferably the filter is securable to the carrier element via a clamping or lock engagement function.

BRIEF DESCRIPTION OF THE DRAWING

[00015] One embodiment of the invention is described in greater detail in the following on the basis of the figure. There is shown:

Fig. 1 a top view on the bandage with a securing element;

Fig. 2 a side view of the bandage with the securing element;

- Fig. 3 an axial section of the securing element;
- Fig. 4 a sectional enlargement of Fig. 3,
- Fig. 5 a top view on the carrier element,
- Fig. 6 a side view of the carrier element,
- Fig. 7 an axial section of the carrier element,
- Fig. 8 an axial section through the illustrated embodiment of the invention comprised of bandage, securing element and carrier element,
- Fig. 9 a sectional enlargement of Fig. 8,
- Fig. 10 an axial section through a illustrated embodiment of the invention comprised of bandage, securing element and carrier element with introduced filter and catheter, and
- Fig. 11 a top view on the embodiment of Fig. 10.

DETAILED DESCRIPTION OF THE INVENTION

[00016] Fig. 1 shows one embodiment of the inventive device for anchoring catheters and filters comprised of an adhesive bandage **10** and a securing element **20** secured centrally thereupon for example with an adhesive strip. The adhesive bandage **10** has a self-adhesive layer on the back side, with which the adhesive bandage **10** can be secured to the body of a patient.

[00017] The securing element **20** is comprised of a round plastic disc, upon which are formed two bars **22** running radially and

perpendicular to each other. The bars **22** have through-going openings **24** oriented parallel to the plane of the securing element **20** and in the tangential direction. Each radial bar **22** has three openings **24** equally spaced radially. The diameter of the openings **24** is somewhat larger than the diameter of the catheter to be secured, in order to guarantee a free axial moveability of the catheter in the opening **24**.

[00018] From the upper side of the bar **22** a narrow gap or slit **26** leads into the respective openings **24**, via which the catheter can be pressed into the openings **24** (see Fig. 2). The diameter of the catheter is therein slightly larger than the breadth of the gap **26**, so that the catheter after introduction into the opening **24** cannot be removed without application of force out of the opening **24**. The catheter is therewith anchored via the securing element **20**, can however be slid along the axis of the opening **24**.

[00019] The securing element **20** exhibits an axial opening **28** centrally in the crossing point of the two bars **22**, in which a carrier element **30** can be seated via a pin or plug **32** introduced axially into the carrier element **30**. The axial opening **28** exhibits, proceeding from the surface of the bars **22**, a conically narrowing segment **28a**, which transitions, via an inward directed flange **29** running about the inside of the axial opening **28**, into a cylindrical section **28b** (see Figs. 3 and 4). Beginning at the bottom side of the carrier element **30**, the pin or plug **32** is first cylindrical, and transitions to a spring or elastic segment with slightly larger diameter and having a cross-wise slit-like cut (see Figs. 6 and 7). If the carrier element **30** is seated on the securing element **20**, the springy segment engages with its slightly larger diameter of the pin **32** behind the inner band or flange or shoulder **29** (see Figs. 8 and 9). The carrier element

30 is held securely yet releaseably on the securing element **20** via this coupling connection.

[00020] The cross section of the axial opening **28** and the pin or plug **32** are non-circular and exhibit for example the shape of a octagon. The carrier element **30** can thus be engaged in eight different angular positions relative to the securing element **20**, wherein it is held secure against rotation in each position.

[00021] The carrier element **30** is comprised of a round disc of plastic, of which the circumference is flattened by two secant lines running parallel to each other (see Fig. 5). An edge **36** is formed perpendicular to the plane of the carrier element **30** at the two remaining circumference segments, which exhibits on its upper edge an inward projecting circumferential spring **34**, which engages in a corresponding groove of a not shown filter to be inserted.

[00022] Figs. 10 and 11 show the use of the inventive device for anchoring of a catheter **40** and a filter **50**. In order to secure the catheter **40** and the filter **50** to a patient by means of the inventive device, first the adhesive bandage **10** is adhered to the skin of the patient by means of the adhesive layer at the bottom side of the adhesive bandage **10**. The one end **40a** of the catheter **40** is applied to the patient. Subsequently the catheter **40** is introduced into at least one opening **24** of the securing element **20**, and preferably in at least two with formation of a loop or undulation. The proximal end **40b** of the catheter **40** is connected via a connecting element **42** to an appropriate connecting element **52** provided on the filter **50**. Thereupon the carrier element **30** is seated with the pin or plug **32** in the axial opening **28** of the securing element **20** and the filter **50** is clamped on the carrier element **30**. By a connection **55** provided

on the filter **50**, the anesthetic or medication can now be applied.

[00023] It is of course conceivable that also the carrier element can be applied to the adhesive bandage. Then, the securing element is engaged upon the carrier element with clamped-in filter by means of a coupling unit, upon which the catheter is anchorable.

Reference Number List

- 10 adhesive bandage
- 20 securing element
- 22 bar
- 24 opening
- 26 gap
- 28 opening
- 28a conical section
- 28b cylindrical section
- 29 inner flange
- 30 carrier element
- 32 pin
- 34 spring
- 36 edge
- 40 catheter
- 40a end of the catheter
- 40b end of the catheter
- 42 connecting element
- 50 filter
- 52 connecting element
- 55 connection